

REMARKS

Reconsideration of this application, as amended, is respectfully requested.

In the Office Action, the Examiner rejects claims 1-19. Claims 1-9, 11 and 13-19 are rejected under 35 U.S.C. §102(b) as being allegedly anticipated by U.S. Patent No. 6,107,691 to Gore et al. (hereinafter "Gore"). Claim 10 is rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Gore in view of U.S. Patent No. 6,152,059 to Del Raso (hereinafter "Del Raso"). Claim 12 is rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Gore in view of U.S. Patent No. 5,449,993 to Davis (hereinafter "Davis").

In response, independent claims 1, 14 and 17 have been amended to clarify their distinguishing features. Support for the amendment is found throughout the specification; specifically, in Figs. 1-3, and in page 4, line 18 – page 5, line 22. Therefore, Applicant respectfully submits that no new matter has been entered by way of the amendment to the independent claims.

In the Office Action, the Examiner alleges that Gore discloses each of the elements of independent claims 1, 14 and 17. Independent apparatus claims 1 and 17, as amended, recite the use of a fuel cell, electrolyzer, motor, power supply and motor drive comprising a DC-AC converter, wherein the motor drive operates in a first position to connect the fuel cell and motor to power the motor, and the same motor drive operates in a second position to connect the electrolyzer to a power supply. Independent method claim 14, as amended, similarly recites the steps of powering a motor by a fuel cell by operating a motor drive comprising a DC-AC converter in a first position, and powering an electrolyzer by a power supply by operating the same motor drive in a second position.

Gore, in Fig. 14, shows an electrolyzer, fuel cell and an offboard connection to the electrolyzer. Further, Gore, in Figs. 7-8, shows an AC/DC inverter. Gore shows similar components; however, Gore fails to show that the same motor drive is used to power the fuel cell and motor, and then the same motor drive being used to connect the electrolyzer to an outside power supply.

The present invention, as shown in Figs. 1-3, uses a motor drive comprising a DC-AC converter 106. The motor drive operates in a first position using mode switches 111 – 114 to power the AC motor 105 by the fuel cell 100, and then the same motor drive operates in a second position using mode switches 111 – 114 to power the electrolyzer 101 from the power supply 107. Thus, the present invention uses fewer components that are redundant to operate the fuel cell and electrolyzer. Gore fails to teach this feature.

As seen in Fig. 2, the DC-AC converter 106 converts the direct current into alternating current by gating activity applied to transistors A_U , B_U , C_U , A_L , B_L and C_L . Alternating current i_a , i_b , i_c is thereby supplied to an AC propulsion motor 105 with the mode switch 112 in the bottom position, the mode switch 113 in the bottom position, and the mode switch 114 in the bottom position. The AC propulsion motor propels the marine vessel.

As seen in Fig. 3, the DC-AC converter 106 is disconnected from the AC propulsion motor 105 and reconnected to a three-phase AC supply 107 from a host ship by switching the mode switch 112 to the top position, the mode switch 113 to the top position, and the mode switch 114 to the top position. The DC-AC converter 106 is also disconnected from the fuel cell 100 and reconnected to the electrolyzer 101 by switching the mode switch 111 to the bottom position. The three-phase AC supply 107 from a host ship provides alternating current to the DC-AC converter 106. The DC-AC converter 106 converts the alternating current into direct

current, and feeds the direct current to the electrolyzer 101, and the stored water in the water storage 104 is converted back into hydrogen gas and oxygen gas by running the electrolyzer 101.

The present invention provides several advantages that solves the problems with prior art systems. This system is more efficient than standard propulsion systems, by providing a system that eliminates the need for redundant power conversion equipment, by providing a motor drive that results in less vehicle weight and less cost. Prior art systems, such as Gore in Fig. 14, require a separate drive to power the electrolyzer from a power supply, and a separate drive for powering a motor by the fuel cell. The present invention accomplishes both by using the same motor drive.

Anticipation requires the presence in a single prior art reference, disclosure of each and every element of the claimed invention, arranged as in the claim. Lindeman Maschinenfabrik GMBH v. American Hoist and Derrick Company, 730 F.2d 1452, 1458, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984). As Gore fails to teach the elements of the claims as set out above, Applicant respectfully requests withdrawal of the 35 U.S.C. §102(b) rejection of claims 1-9, 11 and 13-19 under Gore.

Turning to the §103(a) rejections of dependent claims 10 and 12, it must be noted that the Examiner relies on Gore, in combination with Del Raso or Davis, to support the asserted rejections. As set out above, Gore does not disclose all the elements of independent claim 1. In addition, the hypothetical combination of Gore with Del Raso or Davis would not result in all of the elements of claim 1. Accordingly, since dependent claims 10 and 12 recite additional unique elements and/or limitations, claims 10 and 12 remain patentable over the asserted combination since the cited additional references do not supply the elements missing from Gore with respect

to independent claim 1. Therefore, it is respectfully requested that the 35 U.S.C. §103(a) rejections of claims 10 and 12 be withdrawn.

Accordingly, Applicant respectfully requests allowance of claims 1-19.

In view of the above, it is respectfully submitted that this application is in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and a Notice of Allowance issued. If the Examiner believes that a telephone conference with Applicant's attorney would be advantageous to the disposition of this case, the Examiner is requested to telephone the undersigned.

Respectfully submitted,



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